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ABSTRACT

In developing a vocational education training program, provision must be made for articulating the occupational program and its courses and units with employment opportunities in the occupation. The first step in gathering and organizing data needed in developing an occupational training program is an organizational analysis. The organizational analysis involves three steps: (1) determining the title of the primary occupation, which will later be used to name the occupational program, (2) determining the occupational specialties and subspecialties of the primary occupations to estimate a basis for articulating the components of the training program and to name the courses and units of the program, and (3) determining the occupational program, course, and unit titles. Three groups benefit when the training program is set up in this manner. The students benefit from an education-employment system that offers them multiple-option programming (learning on the job, formal schooling, or a combination) and assists them in attaining their career goals by using the system in total or in part (focusing on one course or one unit). A trained work force is a benefit for the employment community. The school benefits because its training programs are a vital and viable means of preparing students for employment. (YLB)

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Articulation and Multiple-Option Programming:
Key Concepts in Developing Occupational Curricula

by
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What can we do to make a more employable technician? Can we arrange our training programs in such a way that students are employable prior to completion of the total program? Can we develop an occupational training program that can be offered in total for the students who want the program in its entirety or be used in part by those students who only want or need a given course or unit for employment? These and a number of similar questions confront occupational curriculum designers who are interested in better relating the vocational education offerings of the school with the employment opportunities of the workplace.

One of the most direct ways of forming a partnership between vocational education and industry is through the development of training programs. A review of the writings of various authors in the field reveals that the process for developing a training program for a given occupation typically involves two major steps: making an analysis of the occupation in terms of its work activities and information content; and developing the courses and units of the program and the learning materials needed to implement it (Frykland, 1931; Bellinger and Weaver, 1955; Mager and Beach, 1967; Thompson, 1971; Larson, 1972; and Finch and Crunkilton, 1979).

What is lacking in each of the above developmental approaches, however, is provision for articulating or linking the occupational program and its courses and units with employment opportunities in the occupation. No mechanisms are discussed in which the organizational structure of an occupation is used to identify and establish the organizational structure of the resultant training program. To be more specific, none of the above authors include any type of organizational analysis in their program development processes.

Several authors, however, did consider organizational structure, i.e. occupational grouping and the hierarchial ordering of occupations (Butler, 1972; Maley, 1975; Silvius and Bohn, 1976; and Bortz, 1981). For the most part though they categorized various aspects of the world of work solely for descriptive purposes. In contrast, Butler and Bortz used the grouping and hierarchial ordering of occupations for purposes of identifying occupational programs and identifying and naming their components, i.e. courses and units.

Organizational Analysis

This structuring or *organizational analysis* coordinates the occupational offerings of the school with the employment opportunities in the community, and links the components of each into a unified education-employment system. Originally proposed by this author (1981) and modified somewhat since its initial publication, the organizational analysis is the first step in gathering and organizing the occupational data needed in developing an occupational training program. See Figure 1.

Figure 1 - Organizational Analysis

A. Organizational Analysis

1. Determining the Title of the Primary Occupation
2. Determining the Occupational Specialties and Sub-Specialties of the Primary Occupation
3. Determining the Occupational Program, Course and Unit Titles

Primary Occupation

The first step in the organizational analysis is to determine the title of the primary occupation. The primary occupation is defined as "that occupation in which graduates from the yet-to-be-developed occupational programs will be prepared to work." Typical examples of primary occupations are "Dental Technician,"

"Residential Carpenter," "Automotive Technician" and "Library Technician". In each of the examples, the primary occupations are inclusive terms in that each is comprised of a variety of occupational specialty and sub-specialty titles. This characteristic is important when seeking to identify a primary occupation. For example, the occupation of "Automotive Technician" is more appropriately the title of a primary occupation than is that of "Exhaust Systems Specialist;" i.e. the occupation of "Automotive Technician" logically includes the "Exhaust Systems Specialist" as one of its specialties and not vice versa.

Later in the organizational analysis, the primary occupational title is used in naming the occupation program. For example, each of the previously mentioned industrial occupations would serve as the basis for naming the respective occupational training programs, i.e. Dental Technology, Residential Carpentry, Automotive Technology, etc.

Occupational Specialties and Sub-Specialties

The second step in the organizational analysis is to determine the occupational specialties and sub-specialties of the primary occupation identified in step one. The purpose of determining the specialty and sub-specialty titles is two fold: to further the development of the training program by establishing a basis for increasing the number of linkages between the training program and the occupation; and to identify the occupational specialty and sub-specialty titles of the primary occupation that will be used in naming the courses and units of the occupation program.

The basis for articulating or linking the components of the training program and naming the courses and units of the program is established via an analysis

of the primary occupation into its occupational specialties and sub-specialties. An abbreviated example of the analysis of the primary occupation of a "Residential Carpenter" appears in Figure 2.

Figure 2 - Determining Occupational Specialties and Sub-Specialties

- I. Primary Occupation
 - A. Residential Carpenter
- II. Occupational Specialties
 - A. Framing Carpenter
 - B. Finish Carpenter
- III. Occupational Sub-Specialties
 - A. Framing Carpenter
 - 1. Form Builder
 - 2. Floor Framer
 - B. Finish Carpenter
 - 1. Trim Setter
 - 2. Flooring Installer

As shown in Figure 2, the primary occupation of "Residential Carpenter" is first divided into the specialty occupations that comprise it: "Framing Carpenter" and "Finish Carpenter". The specialty titles must be actual occupations that exist in the job market. This is essential in that they establish points for linking school and work, and will be the basis for naming the courses used in preparing people for employment in these specialty areas.

In turn, each occupational specialty is then sub-divided into its respective sub-specialties. Like the specialty titles, the occupational sub-specialties must also be actual, identifiable occupations since they will add still more linkages between school and work as well as serve as the basis for naming the

occupational units used in preparing individuals for work in the sub-specialty occupations.

Program, Courses, and Units

The organizational analysis phase of the occupational curriculum development process is complete once the organization and titles of the group of occupations are used in determining the organization and titles of the training program and its occupational courses and units. The transfer of organizational structure and linking of the programmatic offerings of the school with the employment opportunities in the work community are relatively simple processes and occur systematically as the occupational titles are converted to curricular titles. Figure 3 illustrates the title transfer process.

Figure 3 - Determining Program Organization and Titles
from Occupational Organization and Titles

I. Primary Occupation	I. Occupational Program
A. Residential Carpenter	A. Residential Carpentry
II. Occupational Specialties	II. Occupational Courses
A. Framing Carpenter	A. Framing Carpentry
B. Finish Carpenter	B. Finish Carpentry
III. Occupational Sub-Specialties	III. Occupational Units
A. Framing Carpenter	A. Framing Carpentry
1. Form Builder	1. Form Building
2. Floor Framers	2. Floor Framing
B. Finish Carpenter	B. Finish Carpentry
1. Trim Setter	1. Trim Setting
2. Flooring Installer	2. Flooring Installation

As shown in Figure 3, the occupational program, course and unit titles are derived directly from the corresponding primary occupation, occupational specialty and occupational sub-specialty titles. With minor grammatical changes, the title of the primary occupation of "Residential Carpenter" provides the basis for naming the occupational program, "Residential Carpentry". In similar fashion, the occupational specialty titles of "Framing Carpenter" and "Finish Carpenter" become the course titles of "Framing Carpentry" and "Finish Carpentry". In turn, the titles of occupational sub-specialties become the titles of occupational units, i.e. "Trim Setter", "Trim Setting", etc.

With the organizational analysis finished, the process of articulating the occupational program with the group of occupations stands complete. But still another question must be answered; "what are the benefits afforded the individuals of such an education employment system?"

Benefits

Several benefits evolve for the student when the organizational analysis is an integral part of the total occupational curriculum developmental process. With the uniting of the group of occupations and the occupational program, the multiple-option programming capability of the training program is established. Multiple-option programming is a way in which the occupational program can be organized so as to provide learners with more than the obvious choices of completing the program in its entirety before becoming employable, or leaving prior to completion with no viable education and/or employment options. The purpose of incorporating the multiple-option concept into the curriculum development process is two-fold; to design a system that allows learners the opportunity to build their *occupational equity* (Bortz, 1981) as they complete the units and course of the program, and, at the same time, have available the options of employment, continuing education and training, or both.

Multiple-option programming is a function of horizontal articulation. As defined here, horizontal articulation is the process of linking the occupational program to the group of hierarchially-ordered occupations. The analysis of the primary occupation into its respective occupational specialties and sub-specialties initiate the linking process and maximize the junctures between the components of the occupational program and those of the occupational group. The junctures between the occupational components and the courses and units of the program mark *points of passage* between school and work and give the system its multiple-option capabilities.

Figure 4 illustrates the multiple option concept as employed in the development of the employment-education system. The employment side of the dual path represents the hierarchial ordering of the primary occupation, occupational specialties and occupational sub-specialties. The education or curriculum side of the model parallels and complements the employment side and is comprised of the courses and units of the occupational program. The educational side reflects, both in organization and content, the employment side of the model. The bi-directional arrows represent the linkages established by the horizontal articulation of the employment and educational components. The dots forming the two side of the model represent respectively the tasks of the primary occupation and its specialties and sub-specialties and learning objectives of the occupational program, courses, and units.

With the dual employment-education system in place, several options stand available to assist individuals in attaining their short- and long-range career goals. First, via learning on the job, individuals can move toward and attain their career objectives in the work setting. Second, by enrolling in the program, or a given course or unit thereof, the person's occupational and/or career goals can be achieved through formal schooling. Lastly, for those, individuals who have the opportunity and desire to do both, they can work and

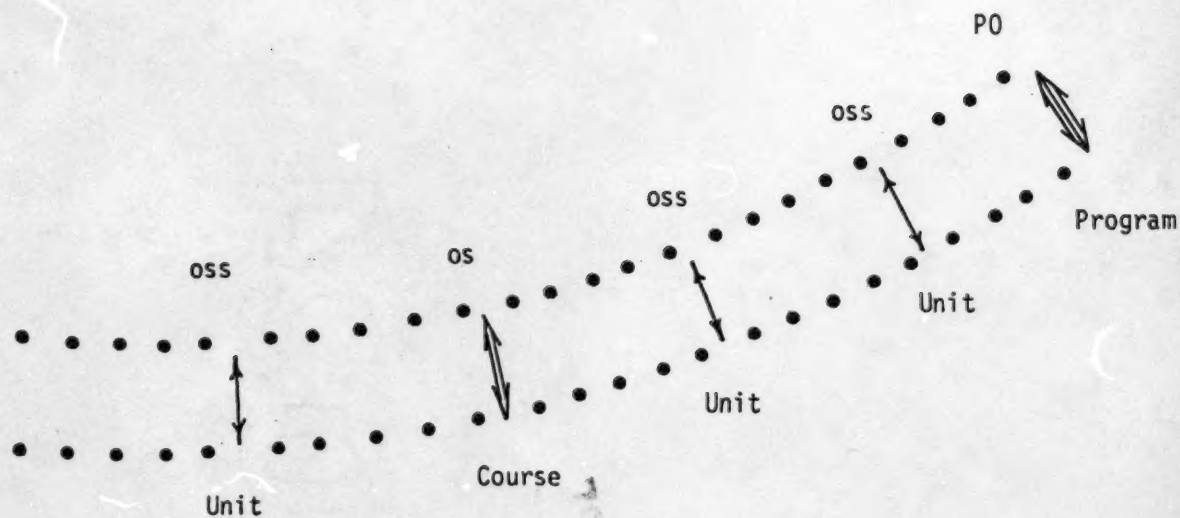


Figure 4 - Employment - Education System

attend school at the same time. The latter, as we all are aware, is becoming more and more common.

Another benefit that also accrues if the employment-education system is designed in a multiple-option fashion is that the system can be used either in total or in part by individuals to achieve their career and occupational goals. As has been mentioned, if the system is used in total, individuals could either enter the work force and begin movement toward their career goals along the employment path, enroll in an occupational program and achieve the same end by way of school, or do both. However, if the system is used in part, individuals would focus on an individual course or unit in the program and begin acquiring the skills and knowledge needed for employment in that specialty or sub-specialty area.

The latter is made possible because the occupational program, courses, and units are horizontally articulated with the primary occupation, occupational specialties, and sub-specialties of the group of occupations. If the occupations can be considered separate entities within themselves, i.e. their duties clearly definable, then the curricular components derived from these occupational titles should also be mutually exclusive of one another.

With this mutually exclusive feature in place, not only the program, but the courses and units as well, can be treated individually. The courses and units can be used to meet the employment needs of learners who do not complete the total program by offering them en route employment options prior to graduation. Typically, these options do not exist in the more traditionally designed training program.

Summary

The organization and design of the training program is an important ingredient in successfully relating the vocational education offerings of

the school with employment opportunities in the workplace. The linking of the two entities is achieved by first identifying the list of occupational specialties and sub-specialties of the primary occupation, and then using this hierarchial organization and list of occupational titles in determining the organization of the program and naming its component courses and units.

Three groups benefit when the training program is set up in the manner described. The employment community benefits in that it has a trained workforce available. The school benefits in that its training programs are a vital and viable means of preparing students for employment. Lastly, the students benefit in that they have an education-employment system which assists them in attaining their career goals and at the same time, offers them a number of en route employment and educational options.

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